

134661-1

Serial No.: 10/712,093
Amdt. Dated: February 27, 2005
Reply to Office action of November 28, 2005.

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Signature

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Gautam Parthasarathy : Group Art Unit: 2879
Application No. 10/712,093 : Examiner: Christopher M. Raabe
Filed: November 14, 2003
For: AN ORGANIC LIGHT EMITTING DEVICE
CAPABLE OF WHITE LIGHT EMISSIONS
AND METHOD FOR MAKING THE SAME

Sir,

DECLARATION OF GAUTAM PARTHASARATHY UNDER 37 C.F.R. § 1.131

I, Gautam Parthasarathy, hereby declare as follows:

1. I am a co-inventor of record of the above-referenced application.
2. My residence address is set forth below, along with my signature.
3. We conceived the subject matter disclosed and claimed in the above-referenced application at least as early as 8 June 2003. This conception is evidenced by the document labeled "GE Patent Disclosure Letter System- Docket Number 31775" which includes a description of a white light emission hybrid small molecule/polymer OLED as set

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forth in the claims of the above-referenced application. This document was prepared at least as early as 8 June 2003. A true and redacted copy of this document is attached hereto as Exhibit A.

4. We actually reduced to practice the subject matter disclosed and claimed in the above-referenced application at least as early as 8 June 2003. This actual reduction to practice is also evidenced by the document labeled "GE Patent Disclosure Letter System-Docket Number 31775," which records successful reduction to practice of the white light emission device at least as early as 8 June 2003. This document was prepared at least as early as 8 June 2003. A true and redacted copy of this document is attached hereto as Exhibit A.

I declare further that all statements made herein are of my own knowledge, are true and that all statements made on information and belief are believed to be true, and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. §1001, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

DATED: 27 February 2006

BY:


[GAUTAM PARTHASARATHY]

Declarant's Full Name: GAUTAM PARTHASARATHY

Country of Citizenship: USA

Residence Address: 333 Broadway Apt 4077 Dublin Square
Saratoga Springs, NY 12866

Exhibit A

GE Confidential & Proprietary Information.
This invention is being prepared for submission
to the GE Patent And Legal Operation. Attorney
work product may be contained herein.

GE Patent Disclosure Letter System

DOCKET NUMBER

31775

DOCKET DATE

[REDACTED]

TITLE OF INVENTION

High accuracy white light emission from a hybrid small
molecule/polymer organic light emitting device

GE TECHNOLOGY AREA(S)

- Corporate R&D Advanced Technology Programs

Keywords:

- Light Energy Conversion (LEC)
- GE Lighting (LBXX)

Keywords:

- Light-Emitting Diodes
- Incandes. & Specialty Lamp
- Lighting Systems
- Materials

PROJECT NAME

Organic LED Device Design

PROJECT NUMBER

2154791200

PROJECT LEADER

Duggal, Anil, R

BUSINESS OR ORG. CONTACT INFORMATION

NAME Duclos, SJ

PHONE NUMBER 518.387.7632

Was this invention first conceived or reduced to practice in the performance of work under a contract between GE and another non-government third party? NO

Date Invention Conceived : 

Circumstances Invention Conceived i.e., described in patent notebook (include page #), technical report, letter, discussed in meeting minutes, etc.

Discovered while measuring electroluminescence spectra. Spectra measured and recorded in patent notebook no. 3225 pp 4-5; 10; 13; 14. Data summarized in "OLED Testlog" and separate spreadsheet detailing spectra. Both are attached.

Was this invention first conceived or reduced to practice in the performance of work under a US Government contract?
NO

ABSTRACT OF THE INVENTION

Please write a brief explanation of the invention (Limit to 350 words)

The invention is a white-light-emitting hybrid small molecule/polymer OLED. The electroluminescence formed at the interface between the CDT polymer SCB11/b and commercially available bathocuprione (BCP) produces efficient, high accuracy white light. The device structure is (from the glass substrate):

Glass/ITO/PDOT/SCB11b/BCP/Alq3/NaF/Al. In addition various configurations with and without the electron transporting emissive layer: Aluminum-tris(8-hydroxy quinolate) and alternative cathodes such as LiF/Al were explored.

BACKGROUND OF THE INVENTION

Please describe the problem or requirement addressed by your invention.

Our device addresses the problem of high quality white light

from organic light emitting devices.

How has this problem or requirement been addressed before?

There are various solutions to illumination-quality lighting based on organic electroluminescence. One example is the use of one or more different color fluorescent or phosphorescent dyes within the OLED; another example is the use of a blue OLED plus the conversion of some of the blue light into other colors using blue-absorbing down-converters. Exciplex emission has been seen before in the literature, but not resulting in such high quality white light.

Is this disclosure letter related to any GE disclosure letters, patent applications or issued patents?

YES

It is related to the other illumination quality white light approaches in our group in that it uses the CDT polymer SCB11/b.

Have you completed a prior art search? NO

Please list any relevant literature or patents of which you are aware.

DETAILED DESCRIPTION OF THE INVENTION

How does your invention work?

Upon bias, electrical carriers are injected and transported through the electron transport layer (in this case Alq3) and the hole transport layer (in this case SCB11/b). The electrons and holes then recombine to form excitons. These excitons then radiatively recombine to form photons which are then extracted through the transparent substrate with a certain efficiency.

Describe the important features of your invention and explain how to use the invention to solve the problems described above.

In addition to the excited state molecules (excitons) of SCB11/b, some fraction of the injected carriers are thought to form an excited state complex between SCB11/b and the molecule comprising the electron transport layer BCP. This complex is commonly termed an exciplex and features broad emission deep into the red. The exciplex emission is peaked at 633 nm with a 120 nm full width at half max. This wide peak is used to produce devices with high CRI (~80), CIE ~ (0.3,0.3) with a correlated color temperature of 6000-8000.

What advantages are provided by your invention?

The voltage tunable exciplex emission provides for exact color tuning and since there is only ONE emissive species differential aging is not seen to be a problem. These aspects make this invention attractive for applications where different CCTs are needed at different time: a tunable white light bulb.

Has your invention been reduced to practice? YES

Date: [REDACTED]

Briefly describe any efforts to make a prototype of your invention or to test your invention. Additionally, summarize the results of any related experiments and testing and highlight any results of particular significance.

There has been no prototyping.

BRIEF DESCRIPTION OF THE DRAWINGS

Please describe the significance of any pictures, drawings, graphs, diagrams, structures or figures and the type of picture along with the specific view or application to the invention.

Attached are current-voltage-luminance and spectral characteristics of this white OLED. Also attached is a summary of the spectral characteristics for the different device configurations at different drive current densities. N.B. Upon examination of older data taken by Chris Heller from [REDACTED], there is evidence of the exciplex peak. Different sources for materials and fabrication were employed ruling out impurity emission. This report is the first instance where this red peak was observed. However it was highlighted at that time.

CLAIMED INVENTION

Please identify novel aspects that should be protected within this disclosure letter.

n/a

ATTACHED FILES

[REDACTED].doc
pdf1.ppt
ts1-spectra.xls

DUTY OF DISCLOSURE		
a.	Have steps been taken to put into use, either outside GE or in our own operations?	No
b.	Has the invention or a product embodying or using it been sold or offered for sale?	No

c.	If the invention pertains to a process, have any steps been taken to employ the process commercially (e.g., for product production)?	No
d.	Has the invention been described in an electronic or printed publication?	No
e.	Has the invention been described to persons who are not employees of GE?	No
f.	Are there results available of a prior art search pertaining to this invention?	Don't Know
g.	Has anyone else associated with the project within GE (marketing, sales, sourcing, etc.) disclosed the invention or offered the invention for sale?	No
h.	If you answered Questions a-g as "NO", is any use, sale, publication, or disclosure of the invention now contemplated?	No

CO-INVENTORS			
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Christian Heller	58 Terrace Avenue Albany, New York zip - 12203	Ceramics (3700) (Defunct)	Electronic and Optic
*gautam parthasarathy	333 broadway apt 407 saratoga springs, ny zip - 12866	Ceramics (3700) (Defunct)	Electronic and Optic
*Lead co-inventor			

Primary / Financing Business (or Advanced Technology Program) : Light Energy Conversion Advanced Tech
 Primary / Financing Component : Light Energy Conversion AT Program
 Associated Lab/Program : Ceramics (3700) (Defunct)/Electronic and Optical Materials (3750)
 Assigned Attorney : Toan Vo

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